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Wallowa-Whitman  
National Forest

La Grande Ranger District  
3502 Highway 30  
La Grande, OR 97850



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**Subject:** Sheep Vegetation Management and Fuels Project  
**Rangeland Resources Existing Condition and Effects Analysis**

**To:** Breezy Carollo, Resource Analyst

**Submitted By:** /s/ Aric J. Johnson

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## ***INTRODUCTION***

The **29,935 acre** Sheep Creek Vegetation Management Project (hereafter referred to as Sheep Veg) area is located in the Upper Grande Ronde watershed and two subwatersheds; Chicken Creek and Sheep Creek. (**Table 1**).

**Table 1.** Watersheds and subwatershed information for the Sheep Veg project.

Watershed Name/Number	Subwatershed Name/Number	SWS Acres (Total)	Project Area Acres	FS Acres	Other (Private, State & BLM)
Upper Grande Ronde	Chicken Creek	11,382	10,975	10,975	407
	Sheep Creek	24,582	18,978	18,978	5,605*
	<b>TOTALS</b>	<b>35,964</b>	<b>29,953</b>	<b>29,953</b>	<b>6,012</b>

\*84 BLM acres

Implementation standards and guidelines from the Wallowa-Whitman National Forest Land and Resource Management Plan as amended, including the PACFISH amendment for grazing management and the Wallowa-Whitman National Forest Watershed Management Practices Guide for Achieving Soil and Water Objectives (WMPG) will be considered during the formulation of action alternatives for this project.

## ***FOREST PLAN GOALS, STANDARDS AND GUIDELINES***

A. FOREST PLAN GOALS: Meet the following Goals, Standards and Guidelines contained in the Wallowa-Whitman National Forest Land and Resource Management Plan, which follow:

1. Manage range vegetation and related resources in a manner so as to insure that the basic needs of the forage and browse plants and the soil resource are met. (FP 4-51)
2. Make available for harvest, forage production that is excess to the basic needs of the plants and soils resources, for wildlife (within agreed upon management objectives) and domestic livestock (within the utilization standards from the Forest Plan standards and guidelines). (FP 4-51)
3. Maintain or improve habitats within or near riparian ecosystems. Protect anadromous fish habitat. (FP 4-44)
4. Protect and manage habitat for the perpetuation and recovery of Proposed, Endangered, Threatened and Sensitive plant and animal species. Maintain native and desirable introduced or historic plant and animal species and communities. Provide for all seral stages in distribution and abundance. (FP 4-02)
5. Implement the standards and guidelines pertaining to forage and browse utilization, riparian area management, soil and water protection and enhancement, and fish and wildlife management as contained in chapter four of the Forest Plan including:
  - a. Water temperatures will not be measurably increased in Class I streams. Temperature increases on Class II and fish bearing Class III streams will be limited to the criteria in state standards. (FP 4-23)
  - b. Where natural conditions permit, strive for 60-100% shade on live streams, 80% or more of the total lineal distance of streambanks in stable condition and limiting inorganic sedimentation to 15%. (FP 4-44)
  - c. Except where data collection and evaluation has indicated that higher utilization standards can be used and still meet the resource objectives, apply the utilization standards from the tables in chapter four with emphasis on the riparian utilization standards. (FP 4-52)

## B. FOREST PLAN UTILIZATION STANDARDS

Forage utilization by domestic livestock will not exceed Forest Plan Standards and Guidelines.

Upland utilization on grass species will not exceed 50% in forested stands  
 Upland utilization on grass species will not exceed 55% in grassland stands  
 Upland utilization on browse species will not exceed 45%

**Table 2.** Upland utilization standards

Uplands					
Forest		Grassland		Shrubland	
Satisfactory Condition	Unsatisfactory Condition	Satisfactory Condition	Unsatisfactory Condition	Satisfactory Condition	Unsatisfactory Condition
45%	0-35%	55%	0-35%	45%	0-30%

Riparian utilization on grass species will not exceed 45%  
 Riparian utilization on browse species will not exceed 40%

**Table 3.** Riparian utilization standards

Riparian			
Grass/Grass Like		Shrubs	
Satisfactory Condition	Unsatisfactory Condition	Satisfactory Condition	Unsatisfactory Condition
45%	0-35%	40%	0-30%

## ***RANGELAND RESOURCES EXISTING CONDITIONS***

The description of rangeland resources, along with the analysis of the expected and potential effects for each alternative, was assessed using GIS analysis, field surveys and professional judgment.

The boundaries for the Sheep Veg project lie primarily within portions of the Sheep Ranch and Chicken Hill (vacant) allotments on the La Grande Ranger District (**Table 2**). The Sheep Ranch and McCarty allotments each have a current allotment management plan (AMP) completed in 2003. The remaining allotments are not managed for livestock grazing and will not be further discussed in this analysis.

**Table 4.** Allotments within the Sheep Veg project area.

Allotment	Type	Total Allotment acres	Allotment acres within the Sheep Project area	Allotment Season of use
Sheep Ranch	Cattle	32,574	13,984	6/16-10/15
Mc Carty	Sheep	17,952	57	6/1-9/30
Chicken Hill	Sheep	16,490	12,527	Vacant
Limber Jim	Cattle	25,136	2,975	Vacant
Trout Meadows	Cattle	32,081	585	Closed
Indian Crane	Cattle	43,395	5	Vacant

### *Sheep C&H Allotment*

The 32,574 acre Sheep Ranch cattle allotment is active and is permitted for 352 cow/calf pairs from 6/16-10/15. The allotment is managed using a five pasture hybrid season long and deferred grazing system. Active management includes the use of herding, salting and developed water sources to maintain appropriate livestock distribution.

See the annual operating instructions for the current pasture rotation plan and specific standards and objectives. Large portions of several pastures (West Chicken, Chicken Riparian, Little Fly and Johnson pastures) of the allotment lie within the boundaries of the Sheep Veg project.

There are numerous infrastructure investments within the allotment/Sheep Veg project boundary.

An allotment management plan (AMP) was completed for the allotment in 2003. Forage conditions within the allotment are considered satisfactory. Range condition and trend evaluations have not been completed for many years and updates would be desirable. Riparian conditions are good in most stream systems.

Portions of the Sheep Veg project border private land which are fenced requiring protection during harvest activities.

#### McCarty S&G Allotment

The 17,952 acre McCarty sheep allotment is active and permitted for 1000 ewe/lamb units from 6/1-9/30. Active management includes the use of herding and developed water sources to maintain appropriate livestock distribution.

See the annual operating instructions for the current rotation plan and specific standards and objectives. Very small portions of the allotment lies within the boundaries of the Sheep Veg project.

There are no known infrastructure investments within the project boundary.

An AMP was completed for the allotment in 2003. Forage conditions within the allotment are considered satisfactory. Range condition and trend evaluations have not been completed for many years and updates would be desirable. Riparian conditions are good in most stream systems.

#### Chicken Hill S&G Allotment

The 16,490 acre Chicken Hill sheep allotment is vacant and not permitted for any livestock grazing. It was last grazed in 1980's with 1000 ewe/lamb units. There are no known infrastructure investments within the allotment/Sheep Veg project boundary.

There is not an AMP for the Chicken Hill allotment.

#### Limber Jim C&H Allotment

The 25,136 acre Limber Jim cattle allotment is vacant and not permitted for any livestock grazing. It was last grazed in the 1980's with an unknown number of cow/calf pairs. There are no known infrastructure investments within the allotment/Sheep Veg project boundary.

The remaining allotments have small portions within the Sheep Veg project boundary are not discussed further.

### Forest and Rangeland Vegetation

Elevations range from 4200 feet to 6989 feet. Precipitation averages **20-40** inches annually of which most comes in the form of winter snows.

The soils within the project area are generally Columbia River basalts covered in many locations with volcanic ash cap deposits. These ashy soils are commonly the most productive growing sites for forest vegetation (Fryxell, 1965). Forest vegetation includes open and closed mixed conifer stands, upland shrubs, dry meadows, moist meadows and areas of conifer regeneration. Conifer stands are interspersed with rocky, grass covered slopes; dry meadows; and moist meadows usually associated with a riparian area. Forestlands are defined as those areas with at least 10% canopy cover.

Dominant plant communities within the forested type include Douglas-fir/snowberry, ponderosa pine/Idaho fescue, grand-fir/big huckleberry, subalpine fir/grouse huckleberry with a variety of

shrubs and grasses intermixed depending on the soil type, aspect, and density of the forest canopy.

Riparian plant communities are generally Douglas-fir-Common Snowberry, Grand-fir-Common Snowberry and Mountain Alder-Currant/Mesic Forb.

Past timber harvest and road construction activities included post-harvest seeding with non-native perennial grasses, which are still present today.

Where limited or no canopy exists, rangeland types are predominately shrub-grassland plant communities and include species such as snowberry, bluebunch wheatgrass, Idaho fescue, blue wild rye, Sandberg's bluegrass, prairie Junegrass, and onespike oatgrass and a variety of forbs such as mountain pea, lupine, yarrow, and arrowleaf balsamroot. Small areas of curl-leaf mountain mahogany are also found on rocky south facing slopes. Small moist to wet meadow areas are found with a variety of sedge and aquatic forbs plant composition.

A Region 6 Sensitive Species listed grass, Richardsons Needlegrass, has been found within the project area. A complete description on this grass is included in the Botany report.

The area also supports isolated areas of invasive annual grasses including cheat grass and African wiregrass (*Ventenata*). A number of invasive herbaceous plants are inventoried in the area (see Invasive Plant report).

The project area has been and continues to be grazed by wild ungulates (elk and mule deer). Many portions of the project area have been grazed by domestic livestock since the early 1900's. Effects from livestock can be similar to those of wildlife. While some effects of livestock grazing are considered acceptable and/or desirable, concentrated use or use that occurs in the same areas year after year can have undesirable effects.

The Sheep Veg project area has small to medium sized (10-500 acres) stands of rangeland vegetation within much larger expanses of forested landscapes, primarily Ponderosa pine and grand fir/ mixed conifer overstory vegetation.

### **Transitory Rangeland**

Many areas within the project area have experienced past timber harvest, most recently in the late 20<sup>th</sup> century. This harvest allowed for the development of transitory rangeland where forage grasses and shrubs became established in areas that had previously been under closed forest canopy.

Transitory range is defined as "forested lands that are suitable for grazing for a limited time following a complete or partial forest removal" (Spreitzer 1985). The increased forage production made available as a result of past forest management reduced overstory shading, allowing for distribution of ungulates over a larger area within areas treated (Hedrick D.W. 1975). The forage produced following development of transitory range is highly variable depending on site conditions.

Transitory range becomes less productive as the trees regenerate. Forage production for ungulates can be expected to peak in the first five years to perhaps 20-30 years after overstory removal. Grass and forb production peaks earlier than shrub production (Bedunah and Willard, 1987). Most overstory canopy removal that provided transitory range occurred between 1960

and 1990.

Through tree regeneration, this condition has gradually reverted back to a closed canopy forest and resulted in reduced forage production over most portions of the Sheep Veg project area in forested areas.

Pre-commercial thinning and understory prescribed fire has improved this condition in some areas where activities have been completed.

Many of the mixed conifer stands within the project area are outside the historic level of canopy closure expected in a stand where natural fire cycles occur. Lack of fire has increased the coniferous stems per acre and allowed for full canopy closure, precluding maintenance of understory grasses and shrubs. Peek et al (2001) found that in inter-mountain forests, a loss of half of understory biomass in a 35 year period of conifer regeneration can be expected.

## ***ALTERNATIVES TO BE ANALYZED***

### Alternative 1

No action. Under this alternative, no prescribed activities would occur and ecological succession would continue along its current trajectory. This alternative demonstrates the baseline for conditions to compare action alternatives, resource effects and trends.

### Alternative 2 – Modified Proposed Action

Alternative 2 responds to all six key issues identified during public scoping (see EA for list of Key Issues). This alternative differs from the proposed action by including guidelines outlined for RHCA treatments in the Blue Mountains Project Design Criteria (PDCs).

#### Forest Plan Amendment

As part of this alternative the district proposes an amendment to the Wallowa-Whitman National Forest Land and Resource Management Plan (Forest Plan) to include mechanical logging on slopes greater than 35%. This proposal is in response to an improvement in logging technology that was introduced after the Forest Plan was developed. This amendment allows us to closely monitor and understand both the capabilities and limitations of tethered logging in our region. The La Grande IDT has identified specific to units (those proposed for skyline harvest), and relies on soils PDCs (see EA p. 21) to minimize ground disturbance and soil displacement.

#### Summary of Changes

Acres were added within the following prescriptions:

- HIM, HIM-OFSS, HIM-Biomass, HTH, HTH-OFSS, HTH-RHCA, FUM

There are fewer acres of treatment with the following prescriptions:

- HTH-UMZ, HPO, HPO-Biomass, HSH, FUH, PCT-Mechanical

The following prescriptions do not change from the proposed action:

- HTH-Biomass, HBT Enhance, PCT Hand, RHCA-Wetland, Prescribed Fire

### Alternative 3

Alternative 3 was developed in response to the key issues of wildlife habitat and treatments in moist OFMS. It differs from the proposed action by reducing the total acres of treatment and eliminating prescriptions that remove the highest basal area, commercial treatments in RHCA's, and commercial harvest in connectivity corridors.

#### Summary of Changes

The following prescription increased in acreage from the proposed action:

- HIM-Biomass

These prescriptions have fewer acres than the proposed action:

- HIM, HIM-OFSS, HTH, HTH-OFSS, HTH-Biomass, HPO, HPO-Biomass, HBT-Enhance, FUH, FUM, PCT-Mechanical, PCT-Hand

We eliminated the following prescriptions from analysis under this alternative:

- HSH, HTH-UMZ, HTH-RHCA, RHCA-Wetland

Treatments proposed under this project are designed to move stands from their current structure and development trajectory to conditions that more closely incorporate natural disturbance regimes. Strategies for restoring forest structure and function include commercial and non-commercial thinning, surface fuels mastication and prescribed burning of surface fuels

**Table 5.** Summary of Alternatives for the Sheep Veg Project.

Sheep Creek Vegetation Management Project Area Boundary: 29,935 Acres				
Subwatersheds Chicken Creek: 10,974 Acres Sheep Creek: 18,961 Acres				
Alternative Elements		Proposed Action (for reference not analysis)	Alternative 2	Alternative 3
<b>Total Harvest/Noncommercial Treatment Acres</b>		<b>11,436</b>	<b>12,785</b>	<b>8,320</b>
<b>Harvest Treatment Acres (total)</b>		<b>2,815</b>	<b>3,367</b>	<b>1,308</b>
Total Acres Treated by Prescription Type	HIM	283	280	100
	HIM – OFSS	497	490	332
	HIM – Biomass	39	39	33
	HTH	619	624	347
	HTH – OFSS	1,018	1,005	205
	HTH - Biomass	257	251	212
	HTH – UMZ	10	10	0
	HTH – RHCA	251	261	0
	HPO	233	235	43
	HPO – Biomass	46	41	29
	HSH	115	115	0
	HBT Enhance	16	16	7

Sheep Creek Vegetation Management Project Area Boundary: 29,935 Acres				
<b>Subwatersheds</b> Chicken Creek: 10,974 Acres Sheep Creek: 18,961 Acres				
Alternative Elements		Proposed Action (for reference not analysis)	Alternative 2	Alternative 3
<b>Noncommercial Treatments</b>		<b>8,608</b>	<b>9,418</b>	<b>7,012</b>
Total Acres Treated by Prescription Type	FUH – Hand	2,674	2,433	2,042
	FUM – Mechanical	3,953	3,897	3,371
	PCT – Mechanical	1,009	996	424
	PCT – Hand	936	938	264
	RHCA – Wetland	36	36	36
	RHCA-PDC	0	1,118	1,118
<b>Post-Treatment Activities</b>				
<b>Post-Harvest Treatment Activities (Acres)</b>	Whipfell	2,815	3,367	1,308
	Grapple Pile	2,292	2,985	1,218
	Hand Pile	523	382	90
	Plant	698	1,480	528
<b>Prescribed Fire Activities</b>	Natural Fuels Burn Blocks	9,521	9,521	9,521
	Activity Fuels/Jackpot Burn	2,815	8,231	6,060
	Grapple Pile	3,953	4,844	3,749
	Hand Pile	4,133	3,351	2,275
<b>Treatments within RHCAs (Acres)</b>	Commercial (<5% of unit), rest noncommercial (RHCA-HTH)	244	261	0
	Non-Commercial Meadow Restoraion (RHCA Wetland)	36	36	36
	RHCA-PDCs	0	1,118	875
<b>Yarding Systems (Acres)</b>	Commerical Harvest Tractor Acres	7,010	2,724	1,192
	Commerical Harvest Skyline Acres	523	382	127
<b>Road Work (Miles)</b>	Reconstruction Closed Open	13.38	22.38 0.68	7.1 0.68
	Temporary Roads - Total			
	• Miles of Non-system	3.94	4.45	3.03
	• Miles of New			
	Miles of Closed Roads Opened (Maintenance)	24.5	39.72	19.0
	Miles of Open Roads		61.8	56.5
	Decomissioning	0.16	0.16	0.16
	Culverts: Temp	4	9	1



Sheep Creek Vegetation Management Project Area Boundary: 29,935 Acres				
Subwatersheds Chicken Creek: 10,974 Acres Sheep Creek: 18,961 Acres				
Alternative Elements		Proposed Action (for reference not analysis)	Alternative 2	Alternative 3
Old Forest Treatment Acres	OFMS Restored to OFSS	489	634	0
Total Volume (MBF)	Saw Timber (MBF)	5.6	9.6	3.6
	Non-Saw Timber (MBF)	2.7	4.3	2.4

## ***EFFECTS ANALYSIS***

### **Assumptions**

The direct, indirect, and cumulative effects analysis area for rangeland resources is the project area boundary for this project.

Land management activities such as timber harvest, pre-commercial thinning, and prescribed burning would result in a return to more historic conditions for most treated units where canopy closure was has reduced the forage production of understory vegetation. A study in Montana found that reducing canopy closure to less than 50% results in a proportional increase in forage production until canopy closure has been reduced to 10-20% (Kolb, 1999). Kolb also suggested that decreased canopy closure also increases the effective precipitation reaching understory plants. Thinned stands of trees tend to collect snow, increasing the snowmelt water supply to an area as much as 100%.

Historically, overstory removal developed areas of transitory range which increased the forage available to be used by wild ungulates. Changes in forest management and long term fire suppression activity have likely resulted in the loss of any transitory rangeland that was created in the 1960's-1980's as the effective improvements in forage production are diminishing after 30 years (Bedunah and Willard, 1987). A return to active management and reintroduction of prescribed fire allows for a return to more historic conditions that would carry forward in time. The combination of reducing fuel loads, reducing conifer encroachment in open meadows and opening canopies increases understory vegetation, and therefore, improves forage quantity and quality allowing for improved herbivore distribution within the project area.

Bunchgrasses normally respond to burning with improved vigor which attracts an increase in domestic and wild ungulates use (Johnson 1998). Limitations on the amount of available forage burned per year minimizes the amount of available forage which may be negatively impacted by wild ungulate grazing which could result in a decline in forage condition or delay in recovery for forage in the burned area.

**Actions to be analyzed by applicable resources are:**

1. Commercial timber harvest variations (HTH, HIM, HPO, HSH, HBT-Enhance) include logging systems (tractor, skyline, forwarder)
2. Non-commercial treatments without harvest (PCT- Hand + Mechanical, FUH, FUM, RHCA-Wetland) include removal method
3. Post-Harvest treatments (grapple piling, under-burning, hand piling, whip-felling, planting)
4. Prescribed Fire – including mechanical pre-treat
5. Mechanical Control lines for burning
6. Fuels Treatments and Harvest within RHCAs
7. OFMS restoration to OFSS
8. Connective Corridors
9. Snag Retention and Snag Creation
10. Temporary Road Construction (both created and utilizing non-system roads)
11. Closed Roads Re-opened for Administrative Access (and maintenance to open)
12. Road Decommissioning
13. Stored roads designated for OHV use
14. Roadside Hazard Tree Removal
15. Mitigation Measures
16. Culvert Replacement

**No Direct, Indirect, or Cumulative Effects on Rangeland Resources**

The following activities associated with the Sheep Veg project have been analyzed and are of such limited context and constrained nature that they would have little to no measurable effect on rangeland resources or range management activities. These activities and their effects will not be discussed further in this effects analysis.

1. OFMS restoration to OFSS
2. Snag Retention and Snag Creation
3. Roadside Hazard Tree Removal
4. Culvert Replacement

*OFMS restoration.* These treatments would not occur within capable and suitable portions of the active grazing allotments or contribute to development of transitory rangeland or affect livestock distribution.

*Snag Retention and Snag Creation.* This activity would have no measureable effect on rangeland resources or livestock distribution. Snags are naturally occurring throughout the project area and their presence or absence does not contribute to development of rangeland vegetation.

*Roadside Hazard Tree Removal.* This activity would not affect livestock management or rangeland resources.

*Culvert Removal.* This activity would not affect livestock management or rangeland resources. These activities and their effects will not be discussed further in the Range Resources section.

## Direct and Indirect Effects on Rangeland Resources

### **Alternative 1– No Action**

This is the no action alternative, which means that all actions authorized by current management plans, permits, easements, and contracts would continue. Authorized actions on National Forest lands in the project area include agency actions, such as road maintenance and noxious weed treatments, and public actions such as fuel-wood removal, mining, and various types of recreation.

All current vegetative plant conditions would continue to exist, with some conditions improving, others remaining static, and still others deteriorating over time. Additionally, some new impacts are likely to occur from the above listed ongoing activities.

The lack of implementation of the action alternatives would over time increase the likelihood of declining forest health associated with overstocked stands and insect infestations. The continued loss of understory vegetation as a result of canopy closure in areas where lack of wildfire and stand re-initiation following past harvest activities, would continue until unmanaged wildfire or insect infestations change this condition. The potential for catastrophic wildfire would remain high. A high intensity wildfire would likely result in loss of available grazing capacity for permitted livestock.

### **Alternatives 2 and 3**

The action alternatives differ in several ways based on treatment type and unit. The direct and indirect effect on rangeland resources does not significantly vary other than acres treated. The resulting reduction in canopy closure following treatment within each unit will allow an increase in herbaceous and shrubby vegetation for 5-20 years until tree regeneration converts treated stands back to a closed canopy arrangement. Follow-up maintenance burns would retard this process and allow for improved forage availability for wildlife and domestic ungulates. **Table 6** describes the total acres within the Sheep Veg project by treatment type. These treatment acres are expected to show an increase in understory forage vegetation following completion, providing additional forage resources for wildlife and permitted livestock. **Table 7-9** describe the acres treated in each allotment by treatment type.

**Table 6.** Vegetation treatment comparison for Sheep Creek Veg project by acre.

Treatment Type	Alternative 2	Alternative 3
Commercial Harvest	3,367	1,308
Non-Commercial	9,418	7,012
Nat Fuels Prescribed Fire	9,521	9,521
Post-Harvest Prescribed Fire	16,426	12,084

**Table 7.** Total mechanical and non-mechanical treatment acres within the Sheep Ranch, McCarty, Chicken Hill and Limber Jim allotments by alternative.

Allotment	Alternative 2	Alternative 3
Sheep Ranch	6,261	3,969
McCarty	16	16
Chicken Hill	4,321	2,637
Limber Jim	1,038	792

**Table 8.** Prescribe natural fire acres within the Sheep Ranch, McCarty, Chicken Hill and Limber Jim allotments by alternative.

Allotment	Alternative 2	Alternative 3
Sheep Ranch	6,599	6,599
McCarty	57	57
Chicken Hill	1,446	1,446
Limber Jim	1,418	1,418

**Table 9.** RHCA treatment acres within the Sheep Ranch, McCarty, Chicken Hill and Limber Jim allotments by alternative.

Allotment	Alternative 2	Alternative 3
Sheep Ranch	455	337
McCarty	0	0
Chicken Hill	546	432
Limber Jim	116	108

### Alternative Comparison Summary

Each action alternative treats the vegetation in similar fashion resulting in improved potential for development of forage. Alternative 2 treats the largest number of acres and will result in the greatest forage improvement whereas Alternative 3 treats the least. This difference across the active allotments may contribute to improved forage production and livestock distribution for 5-20 years following harvest over the other action alternatives.

Acres treated with natural fuel prescribe fire are similar throughout the action alternatives and have no significant differences.

**Harvest Treatment** (HIM, HTH, HPO, HSH, HBT) include logging systems (tractor and skyline)

Direct effects due to biomass removal include disturbance to wild and domestic ungulates during harvest activities, hazards created by wild ungulates on roads during log haul and other related activities. Disturbance to rangeland plants and soils may occur if landings are placed in sensitive areas such as scabs or moist meadows. Equipment use in conditions with wet soils may result in soil compaction and loss of soil productivity and recruitment/retention of desirable native vegetation. Indirect effects are an increase in transitory rangeland and improved access for wild ungulates into areas where down wood has accumulated due to lack of fire.

The proposed action would result in more potential acres available for transitory rangeland conversion. Transitory range is defined as “forested lands that are suitable for grazing for a limited time following a complete or partial forest removal” (Spreitzer 1985). Increased forage production made available as a result of forest management that reduces overstory shading, (Hedrick D.W. 1975) will allow for distribution of wild and domestic ungulates over a larger area within the allotment boundaries. The forage produced following development of transitory range is highly variable depending on site conditions and treatment. Transitory forest range is temporary and will become less productive as the trees regenerate. Forage production for wild and domestic ungulates can be expected to peak from a few years to perhaps 20 or more years (depending on understory regeneration) after removal. Grass and forb production peaks earlier than shrub production (Bedunah and Willard, 1987).

**Noncommercial Treatment** (FUH, FUM,PCT, RHCA) includes hand and mechanical pre-commercial thinning

Direct effects due to pre-commercial thinning would be a reduction of wild and domestic ungulates access to thinned areas due to debris left on the site until the thinned material decomposes or is burned. Units where piling of thinned material is conducted would allow ungulates to access areas where dense small diameter vegetation has been the limiting factor. Units where mechanical thinning using mastication devices is used would create mulch on the ground surface. Wild and domestic ungulate access through these areas would not be limited or reduced by slash. Domestic ungulates tend to avoid areas following pre-commercial thinning until the slash has been reduced in height by snow loading.

These areas would be used as transitory rangeland and show an increase in understory vegetative growth as a result of the reduced canopy closure. Hand thinning does not create disturbance to herbaceous forage in the way that mechanical equipment would. Pre-commercial thinning would indirectly allow increased sunlight and allow improved photosynthetic activity in areas where canopy closure has occurred. This would allow for increases in vegetative growth, plant vigor and possible improvement in plant diversity.

**Post-harvest Treatment mechanical and hand fuels reduction work** includes mechanical grapple-piling, slash-busting, hand piling, whip-felling, planting and burning (prescribed fire and site prep)

Post-harvest treatments are designed to bring surface fuels loads and pre-commercial sized trees to desired levels. Units with heavy surface fuel loadings (fir dominated stands) usually be treated by slash-buster (mastication) or whip-fell/grapple-pile post-harvest treatment with prescribed burn several years (5-10 yrs) after mechanical treatment. Harvest units with light surface fuel loading/low density pre-commercial thinning would receive a whip-fell and prescribed burn within 2-3 years after the whipfelling. Direct effects of mastication treatment will include increased access for wild and domestic ungulates to areas where dense understory vegetation precluded free access. Reduced understory competition and reduced canopy closure would allow for increased forage production on those stands where sunlight and soil resources had otherwise been intercepted by dense conifer stands.

### **Prescribed Fire**

Direct effects from the implementation of the proposed action include an immediate reduction in available forage where burning occurs. This would be short term (1 year) until the following growing season. This reduction can span up to two years but is expected to return within 3-5 years if grazed conservatively (Valentine 1989). If prescribed fire is implemented during the normal grazing season some displacement of domestic ungulates is expected.

Snowberry and huckleberry understory shrub-lands would benefit from prescribed fire and show increased crown density for 3-7 years post treatment (USDA, GTR INT-239). Higher severity burns may damage below ground rhizomes and reduce sprouting (Hansen et al, 1988) however snowberry and huckleberry is generally resistant to even severe burns.

Proposed prescribed burning and future maintenance burns would allow retention of understory forage vegetation released during forest thinning projects. Many of the mixed conifer stands within the project area are outside the historic level of canopy closure expected in a stand where natural fire cycles would have reduced stems per acre and allowed for full canopy closure, precluding maintenance of understory grasses and shrubs.

### **Mechanical Control lines for Burning**

Direct effects due to creating mechanical fireline within the project area would be a potential increase in domestic and wild ungulates use of the new trail. Temporary fireline that are closed immediately following use would not be used by wild ungulates if slash is placed on the surface. There would be no measurable effect on rangeland resources following fireline construction activities.

### **Fuels Treatment and Harvest within RHCAs**

Direct effects due to thinning within RHCAs would be to initially reduce wild and domestic ungulates access to the stream corridor. Hand thinning does not create disturbance to herbaceous forage in the way that mechanical equipment would. RHCA thinning would indirectly allow increased sunlight and allow improved photosynthetic activity in areas where canopy closure has occurred. This would allow for increases in vegetative growth and possible improvement in plant diversity.

### **Connective Corridors**

Connective are untreated areas where wildlife movement can be better accommodated between differing habitats. Left untreated, overstory vegetation will continue to move the stands to a closed canopy condition where forage production decreases. This indirectly reduces potential distribution opportunities for livestock and decreases over time browse based forage for wildlife.

### **Temporary Road Construction**

Direct effects due to temporary road will be opening of travel routes that could be utilized by livestock during the time they are open. Following restoration of the temporary road, access would return to pre-project conditions. Indirect effects of temporary road construction will be a potential decrease in forage vegetation until natural recovery/revegetation occurs. Seeding disturbed soils will restore native vegetation to pre-disturbance levels. Common shrubs huckleberry (VAME/VASC) and snowberry (SYAL/SYOR) sprout following disturbance and will re-colonize within 3-7 years

### **Closed Roads re-opened for Administrative Access**

The condition of the previously closed road has bearing as to the level of new livestock use on the re-opened road. A potential direct effect would be loss of vegetation that has recovered since the road was closed. Many closed roads have native grasses and trees within the road prism. Indirect effects would include better access for permittees to check for cattle however, livestock may use a newly opened road to access areas where increased livestock use is not desired such as a riparian area.

### **Road Decommissioning**

Direct effects due to road decommissioning will be reduction of travel routes utilized by livestock and permittees to access portions of the Sheep Ranch allotment. The roads proposed for decommissioning are scattered across the landscape and some are used occasionally for access to manage livestock and maintain structural improvements. Indirect effects of road decommissioning will be an increase in native vegetation due to increases in soil productivity following decommissioning.

### **Stored roads designated for OHV Use**

Similar to closed roads re-opened for administrative access, the condition of the previously closed road has bearing as to the level of new livestock use on the re-opened road to accommodate OHV use. Roads that have already been used as defacto OHV routes would remain unchanged. A potential direct effect would be loss of vegetation that has recovered since the road was closed. Many closed roads have native grasses and trees within the road prism. Indirect effects would include better access for permittees to check for cattle however, livestock may use a newly opened road to access areas where increased livestock use is not desired such as a riparian area. An indirect result of new OHV routes would be potential displacement or harassment of livestock from areas needed for maintain distribution within the allotments.

### **Mitigation Measures**

Mitigations measures for whitebark pine will have no direct or indirect effect for livestock management or rangeland vegetation. Mitigation measures for Richardson's needlegrass will have no direct effect on livestock management. Re-seeding areas of disturbance with collected and propagated Richardson's needlegrass seed will allow for recovery of foraging areas for wild and domestic ungulates. The limited areas of restoration and the wide distribution of Richardson's needlegrass within the project area, will have no measurable effect for livestock distribution or rangeland vegetation.

### **Cumulative Effects on Rangeland Resources**

Potential cumulative effects are analyzed by considering the proposed activities in the context of past, present and reasonably foreseeable actions. These are the areas where cumulative effects have occurred or may occur. Activities which occurred in the past have been incorporated into the existing condition of the project area. A summary table of the present and reasonably foreseeable future management activities in the cumulative effects analysis area is located in Appendix D of the analysis and has been used to assess the cumulative effects of implementing this project on rangeland resources.

For the purpose of this analysis, the cumulative effects are limited to the extent of the project boundary.

### ***Alternative 1, 2 and 3***

The only reasonably foreseeable future action which would overlap in time and space within this project are which may have a potential to have a long term affect to rangeland resources is Noxious Weed treatment. This project focuses on invasive non-native vegetation treatment to reduce impacts to native vegetation and soil resources. Reducing or preventing establishment of invasive species will allow native plants to maintain dominance, providing forage for native species, cover for migratory birds and small mammals, and protect soil from surface erosion.

No other present or reasonably foreseeable future activities would overlap in time and space with the project area, no would they have a measureable cumulative effect on rangeland resources.

### **Project Mitigations for Rangeland Resources**

1. Fences: All improvements should be protected during vegetation management activities. No trees used as fence support structures will be marked for harvest. If it is necessary to cut range fences, the contractor must be required to immediately repair them to Forest Service standards. These standards are available and should be made a part of the restoration contract. Fence line right of ways must be kept cleared for eight feet on each side of the fence following treatment, regardless of application. **(See appendix 1: Alternative 2, Fences within Units)**
2. Water Sources: All improvements should be protected during vegetation management activities. Spring sources shall be buffered by 50 feet to reduce disturbance to the vegetation and water collection point. **(See appendix 1: Alternative 2, Water developments within Units)**
3. Forage: No more than a total of 10% of the available forage would be burned per year within the project area.

### **Consistency with Laws and Policy**

All action alternatives would ensure that the basic needs of the forage and browse plants and the soil resource are met. Forage that is in excess of the basic needs of the plants and soils resources to be utilized by wildlife and domestic livestock would remain available under all alternatives in this project meeting rangeland management Forest Plan goals.



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